

IN THE CLAIMS

1. (Previously presented) A process for controlling when gear shifting occurs in a transmission of a cycle having at least one sprocket coaxially mounted to hub of a rear wheel of the cycle and a transmission chain engaged with said sprocket, the process comprising the steps of:

providing a sensor that detects a marker that rotates about an axis parallel to an axis of rotation of the at least one sprocket, said marker having angular positions corresponding to no, forward, and rearward movement of the transmission chain; and

selectively activating said sensor according to a command request to initiate a shift.

2. (Previously presented) The process according to claim 1, further comprising the steps of preventing a shift when said sensor detects no movement or rearward movement in the transmission chain and allowing a shift when said sensor detects forward movement in the transmission chain.

3. (Cancelled)

4. (Cancelled)

5. (Previously presented) A system for controlling when gear shifting occurs in the transmission of a cycle, the system comprising:

at least one sensor that detects a marker that rotates about an axis parallel to an axis of a sprocket coaxial with a rear hub of a cycle wheel, said marker having angular positions that correspond to no, forward, and rearward movement of a transmission chain engaged to the sprocket; and

a control unit for activating said sensor according to a command request.

6. (Previously presented) The system according to claim 5, wherein said control unit is configured for preventing, in response to the corresponding signal, a gear shift when the sensor detects no or rearward movement of the transmission chain, and allowing, in response to the corresponding signal, a gear shift when the sensor detects forward movement of the transmission chain.

7. (Previously presented) The system according to claim 5, wherein the at least one sensor is associated with a crank axle of the cycle, and rotation of the crank axle corresponds to the forward and rearward movement of the chain.

8. (Previously presented) The system according to claim 5, wherein said at least one sensor is associated to one of a crank axle of said cycle and a tensioning element.

9. (Currently amended) A method for controlling gear shifting on a bicycle having a plurality of gears with at least one gear including teeth with a sequence of differentiated geometries which define facilitating portions on said gear, the teeth carrying a transmission element, the method comprising the steps of:

a) detecting a processing signal representative of an affirmative shift command;

b) detecting an angular position of the at least one gear by detecting a marker that rotates about an axis parallel to an axis of a hub of a rear wheel in response to the processing signal, said marker having angular positions that correspond to no, forward, and rearward movement of a transmission chain engaged to the gear;

c) comparing the angular position of the at least one gear to the angular position of the facilitating portions of the at least one gear;

d) shifting the transmission element from the at least one gear to another gear if the detected angular position of the at least one gear corresponds to one of the facilitating portions,

wherein steps (b)-(d) are performed only after step (a).

10. (Previously presented) The method of claim 9, wherein the steps (a) – (d) are repetitively performed.

11. (Previously presented) A system for controlling gear shifting in a transmission of a cycle comprising at least one gear wheel on which is engaged a transmission element that performs transmission of motion as a result of its advance in a pre-determined direction; the gear shifting being carried out by changing the position of engagement of said transmission element with respect to said at least one gear wheel, wherein said at least one gear wheel has at least one given angular position in which the shifting of said element for transmitting motion is facilitated, said system comprising:

at least one sensor that detects a marker that rotates about an axis parallel to an axis of a rear wheel hub, said marker having an angular position corresponding to the position of said at least one gear wheel for generating a respective signal;

a control unit for controlling, starting from said respective signal, the change of the position of said element for transmitting motion;

at least one switch for selective activation of said at least one sensor according to a command for changing the position of said element for transmitting motion with respect to said at least one gear wheel; and

said control unit being configured for preventing shifting of said at least one gear wheel when the gear wheel is not in an angular position corresponding to said at least one given angular position, and then allowing change of position of said transmission element when said at least one gear wheel is rotated to a next angular position corresponding to said at least one given angular position.

12. (Cancelled)

13. (Previously presented) The process of claim 1 further comprising providing a chain tensioner that engages the transmission chain, wherein the chain tensioner comprises the sensor.

14. (Previously presented) The system of claim 5 further comprising a chain tensioner that engages the transmission chain, wherein the chain tensioner comprises the sensor.

15. (Previously presented) The method of claim 9 further comprising providing a chain tensioner that engages the transmission chain, wherein the chain tensioner comprises the sensor.

16. (Previously presented) The system of claim 11 further comprising a chain tensioner that engages the transmission chain, wherein the chain tensioner comprises the sensor.

17-20. (Cancelled)

21. (New) A bicycle transmission controller for controlling gear shifts in a bicycle transmission by changing the engagement position of a motion transmission member with respect to a gear wheel when the motion transmission member is moving in a predetermined direction, the controller comprising:

at least one sensor for detecting the direction of movement for a motion transmission member engaged with at least one gear and for generating an associated signal;

means for determining if the movement is in a predetermined direction of forward bicycle travel;

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a command signal for controlling a change in position of the motion transmission member with respect to the gear wheel when the associated signal indicates that the motion transmission member is moving in the predetermined forward direction; and

an activation switch responsive to the command signal for changing the position of the motion transmission member with respect to the at least one gear when the motion transmission member is moving in the predetermined forward direction.